Name _____ Date_____

A2 CC1: Review Sheet for Exam 1 Quarter 3

Show all work on a ***separate sheet*** of paper. **This review is not comprehensive, be sure to study your old notes, tests, and homework assignments!**

1. Divide the following and express the answer in the form: $q(x)+\frac{r}{divisor}$:

   a) $(6x^2-7x-5)\div(3x-5)$

   b) $(3x^2+5x^3+1)\div(x+2)$

   c) $(7x^2-23x+6)\div(x-3)$

   d) $(x^4-5x+10)\div(x+3)$

2. Show that $(x-2)$ is a factor of P(x) = $x^3-3x^2-10x+24$, and find the other two factors.

3. What is the remainder when $3x^{107}+14x^{35}-16x$ is divided by $(x-1)$?

4. What is the remainder when $14x^{10}-2x^3-17$ is divided by $(x+2)$?

5. Determine if $(x+3)$ is a factor of $f(x)=x^3+x^2-5x+3$

6. Determine if $(x+1)$ is a factor of $f(x)=x^3-13x^2+23x-11$

7. If $(x+16)$ is a factor of f(x) then what is one of the zeros?

8. If $(2x-3)$ is a factor of f(x) than what is one of the roots?

9. If $f(x)=(x-3)(2x-1)(3+x)$ than what are the roots?

10. If $f(8)=0$, what is one of the factors of f(x)?

11. If $f\left(\frac{3}{2}\right)=0$, what is one of the factors of f(x)?

For questions 12-15 find the complete factorization:

12. $f(x)=x^3+2x^2-8x$

13. $P(x)=x^3-5x^2-4x+20$

14. $P(x)=x^3-2x^2+4x-8$

15. $P(x)=2x^5-28x^3-64x$

For questions 16-18 find the solution set of f(x)=0:

16. $f(x) = 3x^3 + 11x^2 + 5x - 3$; (hint: -1 is a zero)

17. $f(x) = (x^2 + 3x + 5)(2x + 3)$

18. $f(x) = 2x^5 - 28x^3 - 64x$

19. Determine the equation of a cubic function whose zeros are -1, -2, and -3

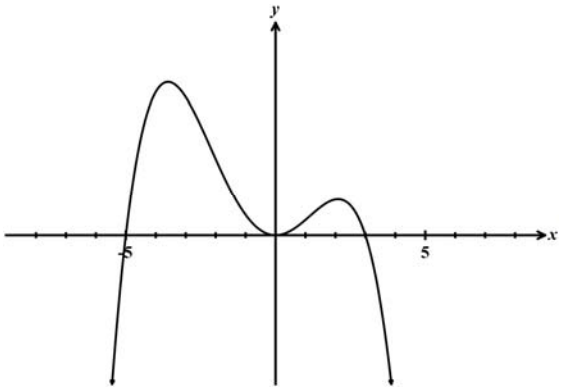
20. Which of the following could be the equation of the polynomial graph shown below?

(1) $y = -x(x+5)(x-3)$

(2) $y = x(x+3)(x-5)$

(3) $y = -x^2(x+5)(x-3)$

(4) $y = x^2(x+3)(x-5)$



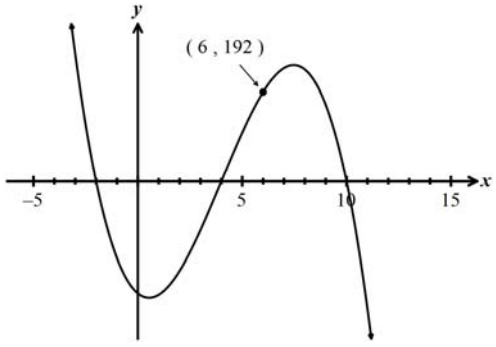
21. The cubic polynomial shown graphed below passes through the point $(6, 192)$ as shown. Which of the following is the value of the leading coefficient of the polynomial?

(1) -7

(2) -3

(3) $\frac{1}{3}$

(4) 5



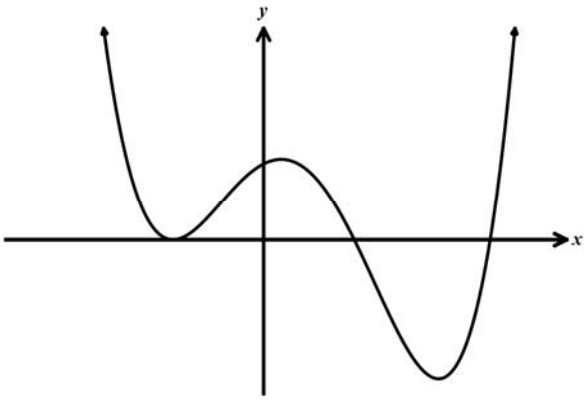
22. Which of the following is a factor of the cubic polynomial $x^3 - 10x^2 + 11x + 70$?

(1) $x+10$ (3) $x-7$

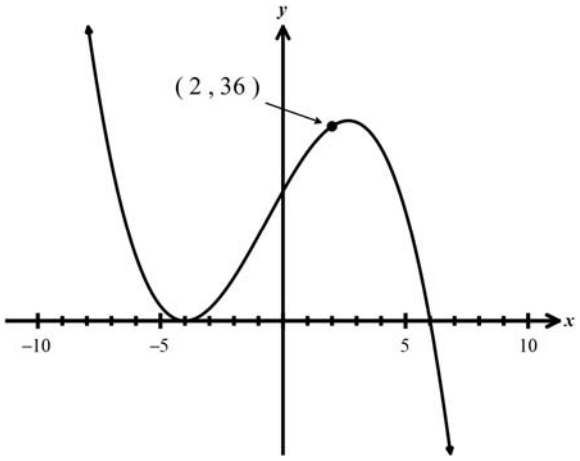
(2) $x-2$ (4) $x+5$

23. Given the cubic polynomial $f(x) = x^3 - 5x^2 - 4x + 20$ answer the following.

(a) Find the *x*-intercepts of this function algebraically. Show how you arrived at your answer.
(b) Explain why the graph below could *not* represent that of $f(x)$.



24. The cubic polynomial below has zeroes at $x = -4$ and $x = 6$ only and passes through the point $(2, 36)$ as shown. Algebraically determine its equation in factored form. Show how you arrived at your answer.



25. The rational expression $\dfrac{4x^3 - 2x^2 + 8x + 10}{x - 5}$ can be written as $p(x) + \dfrac{k}{x-5}$, where $p(x)$ is a quadratic polynomial and *k* is a constant.

(a) Determine the equation for $p(x)$. Show how you arrived at your answer.
(b) Is $x - 5$ a factor of $4x^3 - 2x^2 + 8x + 10$? Explain how your reasoning.